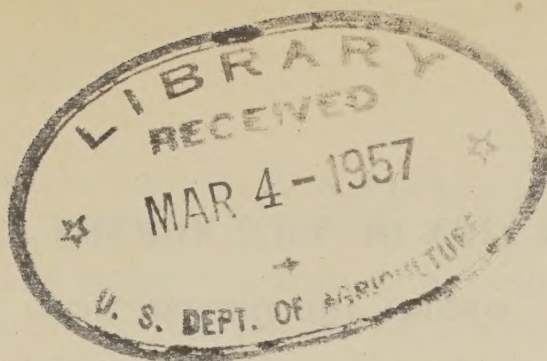


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United States Department of Agriculture,
BUREAU OF PLANT INDUSTRY,
Seed and Plant Introduction and Distribution,
WASHINGTON, D. C.

DISTRIBUTION OF THE MORTON CITRANGE
IN 1906.

In the course of the experiments conducted by the Office of Plant Breeding Investigations of this Bureau, several new hardy citrus fruits, or *citranges*, have been produced, which are believed to possess special value for general cultivation in the southern sections of the United States.

Cooperative arrangements were made by which the trees of the new varieties are to be distributed through this Office, and Dr. Herbert J. Webber, Physiologist in Charge of Plant Breeding Investigations, has prepared this circular especially to accompany the trees of the Morton citrange.

A. J. PIETERS,
Botanist in Charge.

Approved:

B. T. GALLOWAY,
Chief of Bureau.

WASHINGTON, D. C., *February 12, 1906.*

DISTRIBUTION OF THE MORTON CITRANGE.

ORIGIN AND DESCRIPTION.

For several years the Department of Agriculture has had in progress experiments in the production of hardy frostproof oranges. The Trifoliolate orange, which is grown extensively as a hedge plant in the southern United States, is grown out of doors as far north as New York. The fruit is small, very bitter, acrid, gummy, seedy, and inedible. This hardy species was crossed with the ordinary sweet orange, with the object of producing hybrids combining the hardy, cold-resistant character of the Trifoliolate species with the desirable fruit qualities of the sweet orange. From the numerous crosses made by the writer in conjunction with Mr. W. T. Swingle, of the Department of Agriculture, a number of hybrids were produced, and several of these which have been grown and tested give evidence of considerable value. The new hybrid fruits are very different from the orange, lemon, lime, or any other member of the citrus family and have been named citranges.

One of these new varieties, or citranges, which is a hybrid of the Trifoliolate orange, used as the mother parent, and the common orange, used as the father parent, has, with the approval of the Secretary of Agriculture, been named the "Morton," in honor of the second Secretary of Agriculture, the late Honorable J. Sterling Morton, under whose administration a considerable portion of the work on citrus fruits in Florida was conducted. A technical description of the Morton citrange follows:

Fruit slightly compressed, spherical, or nearly round; large, from 3 to 3½ inches in diameter and from 2¾ to 3¼ inches high. Color a rather light orange yellow, similar to the Willits citrange; surface smooth or slightly roughened by small depressions over some of the large oil glands, this roughening being more pronounced at the base of the fruit, and with a few slight furrows running from base to apex, giving the fruit a slightly lobed appearance. Weight medium, somewhat lighter than water; calyx persistent but inconspicuous, as in the case of the ordinary orange; rind medium thin, one-eighth to three-sixteenths of an inch in thickness, tender, not adhering so close to fruit as in the Rusk citrange, with some flavor of orange and some of Trifoliolate orange, no more disagreeable to taste than an ordinary orange; oil glands similar in size to those of ordinary orange, mainly round; pulp translucent, light orange yellow, pulp vesicles longer and smaller than in ordinary orange, tender; segments 7 to 10, separating membranes rather thicker and firmer than in ordinary orange, with very slight suggestion of the Trifoliolate orange bitterness; texture of fruit tender; axis small, one-quarter to five-sixteenths of an inch in diameter; flavor sprightly acid, with a peculiar but pleasant taste, sweeter than either the Rusk or Willits citrange and less bitter; seedless or nearly so; aroma pleasant but very light, suggesting both the common orange and Trifoliolate orange. Tree similar to Trifoliolate orange, vigorous and hardy, evergreen or semi-evergreen; medium height, shapely; leaves trifoliolate but larger than those of ordinary Trifoliolate orange. Season of maturity medium early, from first of October to last of November.

The fruit of the Morton citrange is very similar in appearance to that of an ordinary orange, from which it can be distinguished only by careful examination. It is rather too sour to eat out of hand, but when eaten with sugar, or the pulp taken out of the fruit and served with sugar, as is frequently done in the case of the grapefruit, it will be found very palatable. It makes a very excellent citrangeade, similar to lemonade, and may be used for culinary purposes in making pies, cakes, etc. As an eating fruit, the Morton is probably better than the other varieties or scions of the citrange which have thus far been introduced, namely, the Rusk and Willits citranges. It is, however, inferior to the Rusk citrange for preserving purposes and is not equal to the Willits citrange to use as a substitute for the lemon.

HARDINESS.

While the hardiness or cold resistance of the Morton citrange has not been thoroughly tested, it is known to be very hardy in comparison with the ordinary orange. Young trees in northern Florida have endured temperatures between 15° and 18° F. without noticeable effect. At the Georgia Experiment Station the Morton citrange has withstood the winters since 1900 and has there been subjected to a temperature of 8° F. above zero.

It is believed that the trees can be grown without protection in South Carolina, Georgia, northern Florida, Alabama, southwestern Tennessee, Mississippi, Louisiana, eastern and southern Texas, southern Arkansas, southern Arizona, southern New Mexico, and the warm regions of low altitude in California, Oregon, and possibly Washington. The distribution of the stock of this variety by the Department of Agriculture will be limited to these sections.

CULTIVATION.

The Morton citrange is not recommended for commercial cultivation on a large scale. While the fruit is of undoubted value, it does not compare in quality with the fine oranges of Florida and California. Its greatest value will probably be in its use as a "home" fruit. A few trees should be grown in the yard or garden, and these will furnish sufficient fruits for home use.

The trees for distribution are budded on hardy Trifoliate orange stocks. The buds were inserted low on the stocks, and the point of union of the stock and scion can in most cases be easily distinguished about 3 to 6 inches above the roots.

No special soil can be recommended at present for the citrange, as our experience with the variety is as yet too limited. The soil, however, should be thoroughly drained.

In planting, follow the ordinary practice used in planting other fruit trees, such as peach trees, pear trees, etc. The tree of the Morton citrange

grows to a height of from 15 to 20 feet or more, with a top from 10 to 12 feet in diameter.

In most soils the trees will require to be manured if they are to do well. Citrus fruits in general require a fertilizer high in potash content. The ordinary orange tree fertilizer contains from 3 to 4 per cent of ammonia, 5 to 6 per cent of phosphoric acid, and 10 to 13 per cent of potash. The citrange should probably be cultivated in general about the same as peach trees or pear trees.

In ordinary practice citrus trees are not pruned, except when young in order to guide and shape the first growth. It is believed that very little or no pruning will be necessary with the citrange. The trees distributed are buds seven or eight months old, and if they receive proper care they should produce their first fruit in about three or four years after planting.

REPORT OF RESULTS DESIRED.

The cultivation of the citrange is experimental, as the fruit is entirely new and comparatively untried, and the extension of the cultivation of the variety and the results obtained with it will be an interesting item in the annals of American horticulture. It is earnestly urged that all persons who receive the trees should give them special care. A record will be kept by the Department of Agriculture of the name and address of every person to whom stock is sent, and in due time reports will be requested from each on the condition of the trees and the results obtained. The trees sent out are of considerable value, in view of their limited number and the fact that the stock of this variety can not be obtained elsewhere. Persons who receive the trees are urged to aid the Department in introducing and establishing the variety by making notes on the trees as to hardiness, behavior under the methods of fertilization and cultivation given, character of the soil, value and uses of the fruit, etc., and be prepared to furnish the Department with a careful record in regard to the results obtained.

PUBLICATION ON THE MORTON CITRANGE.

A detailed report has been prepared giving an account of the experiments which led to the production of the Morton citrange and containing colored and photographic illustrations of the fruit and tree. As soon as this report is printed, a copy will be sent to every person who has received trees of the variety.

HERBERT J. WEBBER,
Physiologist in Charge of
Plant Breeding Investigations.

Approved:

A. F. WOODS,
Assistant Chief of Bureau.